Attack®

HEAT TECHNOLOGY PRODUCER

WOOD GASIFYING BOILER

INSTRUCTION FOR USE

ATTACK DP

TECHNICAL MANUAL

EN

01.10.2007

ATTACK DP - Wood gasifying boiler

- Assembly, pre-heating and training of the attendance is perfomed by an assembly technician trained by the manufacturer, who also fills in a document on the installation of the boiler
-During wood gasifying, tar and condensates (acids) are created in the fuel bin. Therefore behind the boiler the mixing appliance regumat or temperature-responsive valve must be installed, to keep the minimum temperature of return water of 65°C into the boiler.
- Operation temperature of water in the boiler must be of 80-90°C.

- The boiler must not be permanently operated with the output lower than 50%.

- When a circulation pump is used, it must be controlled by a separated thermostat in order to keep the prescribed minimum temperature of return water.
- Ecological operation of the boiler is during nominal output.
- We recommend to install the boiler with storage reservoirs and Regumat which guarantees economy in fuel in 20 až 30% and longer service life of the boiler as well as comfortable attendance.

- If the boiler cannot be attached to the accumulation, we recommend to connect it at least with one equalisation basin with the volume of about 25l for 1 kW of the boiler output.
- During the mode with decreased output (summer mode and water heating) it is necessary to star t burning daily.

- Fuel must be used only dried of 12 - 20% moisture content (with a higher moisture content of fuel the output of boiler decreases and its consumption increases)

- The choice of the right boiler size, that is its heating output, is a very important condition for economic operation and right function of the boiler. The boiler must be chosen so that its nominal output responds to heat loss of the heated object.

<u>The guarantee does not apply for the boiler if:</u>

- it is operated with wood exceeding 20% moisture content or with fuel not prescribed by the manufacturer.
- If a proper mixing appliance Regumat is not installed in the system, whích provides for return water the temperature of 65°C.
- a functional thermostatic valve (WATTS STS20) is not installed on the cooling circuit of boiler and connected to the source of cooling water.

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Introduction:

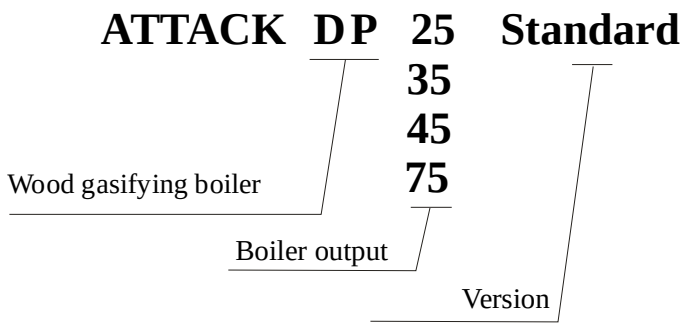
Dear customer,

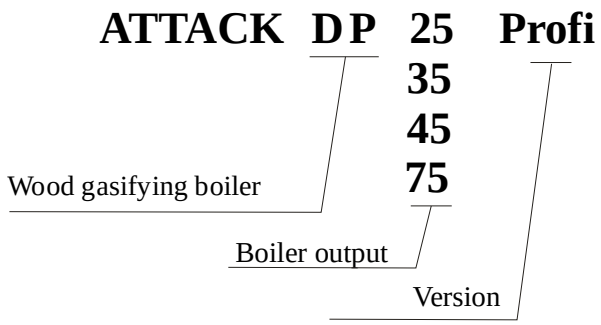
Thank you for confidence that you showed us by purchasing our product - ATTACK wood gasifying boiler. We wish you long and reliable operation. Proper attendance of the boiler is one of the conditions for reliable and right operation, so please read this instruction for use carefully. The manual is written in the way to respect the right operation of the boiler in central heating system.
The conditions of right operation of the boiler:
- to choose the right type and output of the boiler
- impeccable putting into operation
- sensitive attendance
- regular technical maintenance
- reliable service

General description:

ATTACK DP wood gasifying boiler is designed for economic and ecological heating of family houses, bungalows, small plants, workshops and similar objects.
Specified fuel for ATTACK DP boilers is dry wood, e.g. logs of lengths, depending on the type of boiler. The wood gasifying boiler is the holder of CE 1015 certificate.

Description of ATTACK DP brand:



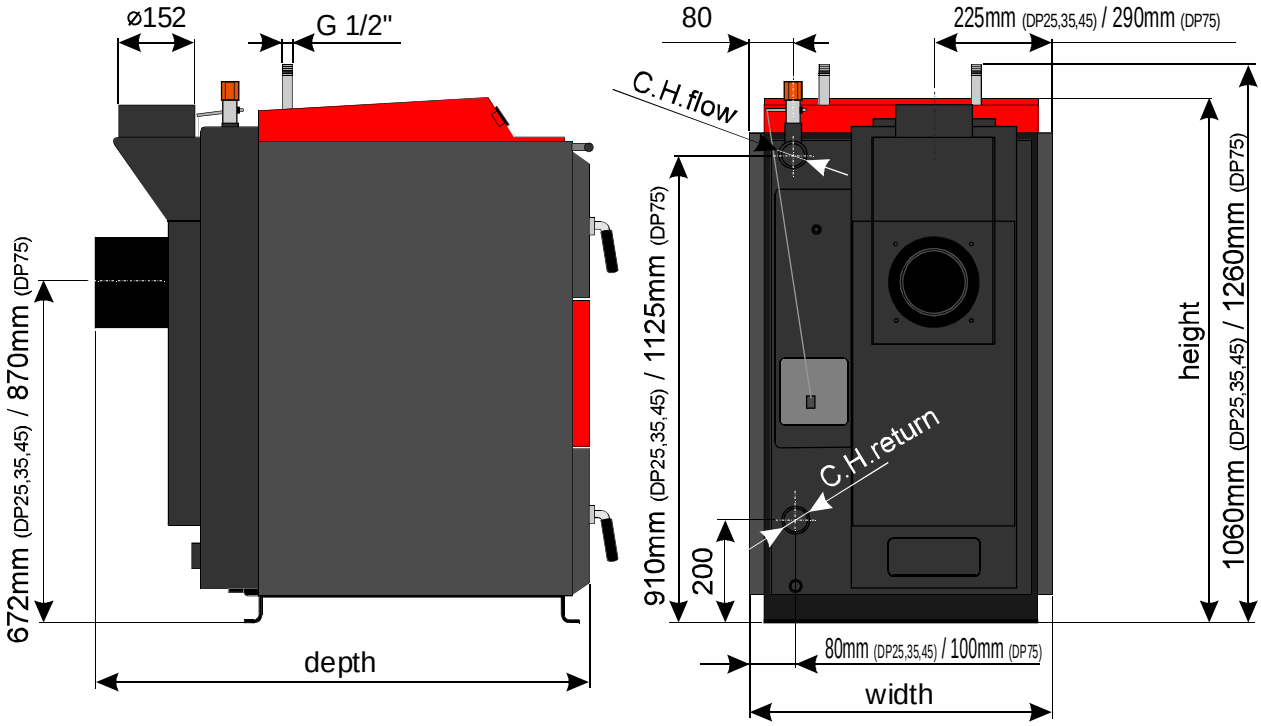


Technical parameters:

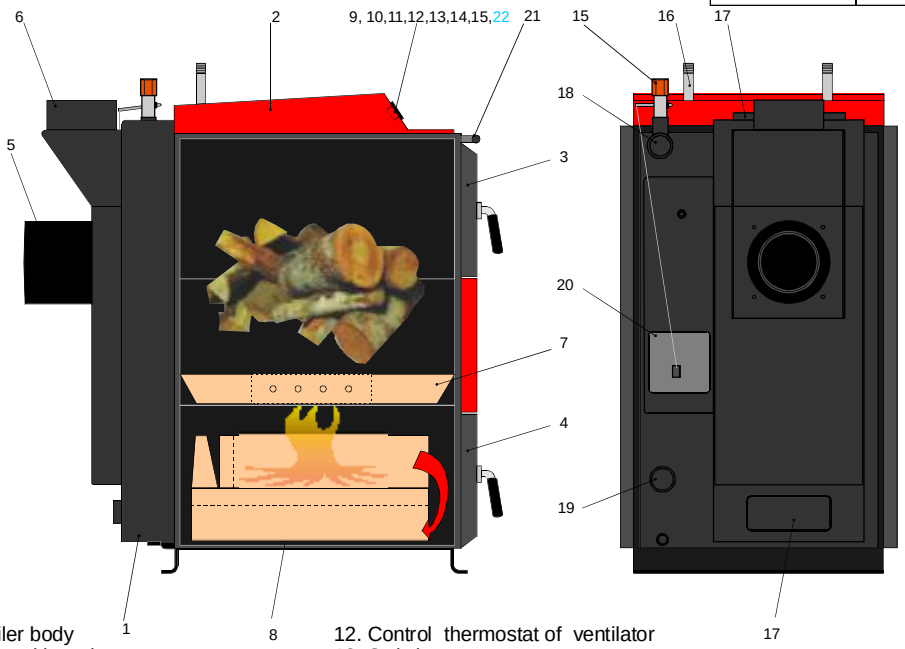
Type of boiler		DP25	DP 35	DP45	DP75
Boiler output (verzia STANDARD)	kW	16-25	22-35	29-45	48-75
Output range (verzia PROFI)	kW	10-25	14-35	18-45	30-75
Heating surface	m^2	2,30	2,70	3,10	5,20
Feed hopper capacity	dm^3	105	145	185	350
Dimension of feeding openning	mm	235x445	235x445	235x445	294x544
Specified chimney	Pa	25	25	25	25
Max. working water overpressure	kPa	250	250	250	250
Boiler weight	kg	350	390	420	650
Diameter of flue connection	mm	152	152	152	219
Boiler height	mm	1080	1080	1080	1320
Boiler width	mm	580	580	580	750
Boiler depth	mm	1050	1150	1265	1600
Shielding of electric parts	IP	21	21	21	21
Electrical input	W	45	45	45	45
Boiler efficiency	%	86	86	86	86
CO emision class		3			
Temp. of flue gas in nominal output	°C	220	220	220	220
Flow of flue gas in nominal output	kg/s	0,015	0,018	0,021	0,045
Maximum noise level	dB	65	65	65	65
Specified fuel		Dry wood of 15-17 Mj/kg-1 calorificvalue,water content min. 12% - max. 20% diameter 80-150mm			
Average fuel consumption	kgh^{-1}	7,5	10,5	13,5	22,5
Consumption for season		1kW = $1m^3$			
Max. length of logs / Depth of combustion chamber	mm	550/580	650/680	750/780	1000/1100
Burning time in nominal output	hod.	3	3	3	3
Water volume in boiler	l	65	78	92	160
Min. volume of equalisation basin	l	500	625	750	1500
Voltage	V/Hz	230/50			
Range of temperature of heating water	°C	65-90			
Range of room temperature (PROFI version)	°C	10-27			
Current carrying capacity of boiler regulator contacts (PROFI version)	V/A	230 / 1,5			

Specified min.temperature of returnable water in operation is 65°C.
Specified temperature of water during operation in the boiler is 80-90°C.

Dimensions of ATTACK DP boilers



	DP25	DP35	DP45	DP75
C.H.flow connection	G6/4"	G6/4"	G2"	G2"
C.H.return connection	G6/4"	G6/4"	G2"	G2"

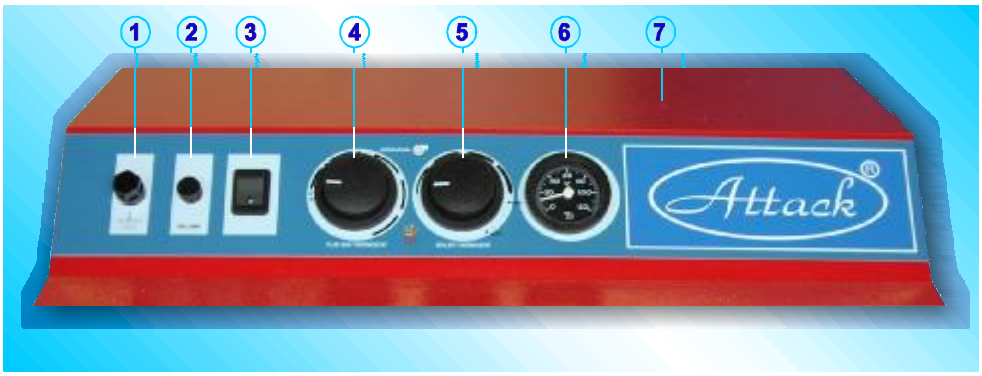


1. Boiler body
2. Control board
3. Feeding door
4. Ash door
5. Sucking fan
6. Flue
7. Heatproof shaped piece - jet
8. Heatproof shaped piece - ash pan
9 Boiler thermostat
10. Reset
11. Flue gas thermostat
12. Control thermostat of ventilator
13. Switch
14. Thermometer
15. Regulator of output
16. Cooling down circuit against overheating of water in boiler
17. Cover of cleaning hole
18. C.H.flow connection
19. C.H.return connection
20. Control door
21. Pull rod of chimney flap
22. Boiler regulator (PROFI version)

Control board

ATTACK DP Standard

Wood gasifying boiler "ATTACK DP Standard" is controlled by a boiler and flue gas thermostat.



1. Reset
2. Fuse
3. Main switch
4. Flue gas thermostat
5. Boiler thermostat
6. Thermometer
7. Pull rod control

Description:

1. *Reset* - protection of the boiler against overheating (in case the temperature is higher than 110 degrees C, the boiler is disconnected from the power net)
2. *Fuse* - protection of the boiler against short circuit

3. *Main switch* - switching on of the boiler,switching off if necessary

4. *Flue gas thermostat* - when the temperature of flue gas decreases under set up value, the fan is switched off
5. *Boiler thermostat* - serves for setting up maximum temperature of water in the boiler (after exceeding set up temperature the fan is switched off and the boiler works with minimum output. After decreasing set up temperature the fan is switched on again and the boiler works with maximum output.
6. *Thermometer* - indicates outlet temperature of water from the boiler

7. *Pull rod control* - serves for opening and closing of fuel cut-off flap

ATTACK DP Profi

The asset of Profi version of ATTACK DP boilers comparing with Standard version is in more comfortable service and the possibility of heat output modulation and addition of control elements.

The boiler temperature is kept at the level set by the user, by setting up number of revolutions of the flue gas fan. ATTACK PROFI boiler regulator measures the temperature of water in the boiler continuously and depicts its value on the display, controlling the pump of central heating at the same time. There is a possibility to connect a room thermostat to the boiler regulator. The room thermostat provides thorough regulation of temperature of heated rooms. The control of drive of the four-way mixing valve is possible as well.

1 - Main switch

2 - Display showing the boiler temperature

3 - Control light of burning up process

4 - Control light of boiler overheating

5 - Control light of room thermostat

6 - Turning button of boiler thermostat

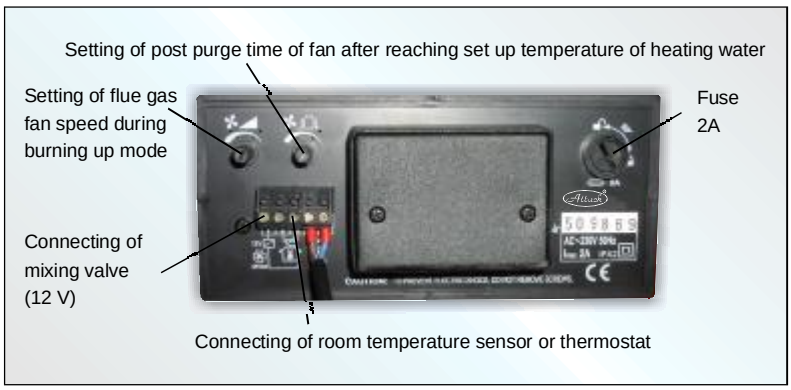
7 - Control light of circulating pump operation

8 - Control light of lack of fuel

9 - Turning button of room thermostat

10 - TEST button (by pressing the button the temperature set up by the turning button 6. appears and at the same time flue gas fan switches off for a moment)

Backward view of electronic regulator:


Setting of post purge time of fan after reaching set up temperature of heating water
Setting of flue gas fan speed during burning up mode
Fuse 2A
Connecting of mixing valve (12 V)
Connecting of room temperature sensor or thermostat

Purpose of use

Ecological hot-water boiler Attack DP is designed for heating of family houses and similar objects. The boiler is designed for burning wood only. Any dry wood can be used for burning, mainly logs. Also wood of bigger diameter, blocks, can be used, which reduces nominal output but prolongs burning time. The boiler cannot be used for burning filedust and small wooden debris. This can be burnt only in small amount together with logs (max. 10%). Due to its large feed hopper you can avoid the most demandable operation of preparation and cutting the wood into smaller pieces.
Location of the boilers in living spaces (including halls) is inadmissible!

Technical description

The boiler is designed for combustion of wood on the principle of wood gasifying using a flue gas fan sucking flue gas from the boiler.
The body of the boiler is a weldment of metal steel plates of 6 mm thickness. It includes a feed hopper with a heatproof shaped piece that has an oblong opening for transition of flue gas and gas. Under it in the after-combustion space there is an ash pan. In the rear part of the boiler there is vertical flue channel with a fuel cut-off flap in the upper part. There is also a suction branch for connection to the flue.
In the front wall in the upper part there is a feeding door and in the bottom part there is an ash door.In the front part of the upper cover there is a pull rod of fuel cut-off flap. The body of the boiler is from the outside insulated by mineral fleece put under the covers of outside jacket. In the upper part of the boiler there is a control board for electromechanical regulation.
In the rear part of the boiler there is a channel for inlet of primary and secondary air with a regulation flap where the air is heated to a high temperature.

Description:- STANDARD version
- Thermometer indicates outlet temperature of the boiler
- If it is necessary, the boiler can be switched off by main switch
- Electric circuit is protected by a fuse
- Fan can be switched off by a flue thermostat after burning down fuel.

ATTENTION! For heating up, set this thermostat to 0°C. After fuel starts burning, set the flue thermostat to "Operation". If the temperature of flue gas drops under set up temperature, the flue thermostat is switched off. If you want the fan start again, you have to set up a lower temperature.The optimum condition for operation must be tried.
- Regulation thermostat controls the operation of the fan by the outlet temperature of water from the boiler.
- Safety non-returnable thermostat serves as protection against overheating in case of breakdown of the regulation thermostat or as signalization device for overcoming safety temperature. After overcoming the temperature it is necessary to press it.

Operation rules

Preparing the boiler for operation
Before putting the boiler into operation make sure whether the system is filled with water and deareated. The boiler can be operated only in accordance with these instructions in order to work properly.It can be operated only by an adult. When installing the boiler, lay something under the rear part to elevate it in 10 mm for better flushing and deareating.

Warning

After the first heating up, there can be condensation and condensate may leak. This is not a defect Condensation disappears after longer heating. When burning smaller wooden waste it is necessary to check the temperature of flue gas which must not overcome 320°C. Otherwise the fan can be damaged. Creation of tar and condensate in the feed hopper is a phenomenon accompanying wood gasifying.

If the boiler was out of order for a longer time (switched off,broke down), it is necessary to use extreme caution when putting into operation again. In not working boiler , the pump can be blocked, water can leak or the boiler could get frost in winter.

Heating up and operation

Before burning the fuel open the fuel cut-off flap pull the pull rod of the flap and set the flue thermostat to 0°C. Through the upper door put dry wood chips on the heatproof shaped piece perpendicularly to the channel to leave 2-4 cm gap between the fuel and channel for transition of flue gas. Put paper or wood wool on the chips, then chips again and a bigger amount of dry wood. After burning the fuel switch on the fan and close the fuel cut-off flap.On the thermoregulation valve set the demanded temperature of water (80- 90°C). After proper start fill in the whole fuel bin and set up the fuel thermostat into operation position.

CAUTION: *During the operation the pull rod of fuel cut-off flap must be shifted in otherwise the fan can be damaged..*

To gasify wood, there must be a reduction zone in the boiler (a layer of charcoal on the ceramic shaped piece in the feed hopper). The layer can be created by combustion of dry wood of proper size. When wet wood is burned, the boiler is not working as a gasifying boiler and the consumption of wood rises, output is lower than demanded and the service life of boiler as well as that of flue is shortened. If the draft is as specified, the boiler works up to 70% of output even without a fan.

Electromechanical output regulation

Output regulation is conducted with a flap on the rear side of the boiler wich is controlled by a thermoregulation valve. The valve opens or closes the flap automaticly by set up outlet temperature (80 - 90°C) of water. Pay special attention to setting up the thermoregulator as this except of regulation has another important function - **protection the boiler against overheating.** For setting up follow the instructions for aseembly and set up of the regulator.Check the protection against overheating by verifying the function of regulator with 90°C water. For this temperature the regulation flap must be almost closed. Set up of the regulator must be tested. The position of the regulation flap can be watched from the back side of the fan. With the boiler thermostat located on the panel of the boiler you can control the fan by outlet temperature of water. The temperature on the regulation thermostat should by in 5°C lower than the one on the thermoregulator. On the panel there is also a flue thermostat serving to stop the fan after burning out of the fuel. For heating up, set it up to 0°C. After proper heating up set it up to operation position so that the fan is working and is not stopped until burning out of fuel. The optimum position of the flue thermostat must be watched by the kind of fuel, draft and other conditions. Check the temperature of outlet water on the thermomanometer. On the panel there is also a safety non-returnable thermostat.

Refueling

For refueling first open the fuel cut-off flap by the pull rod, do not stop the ventilator. Wait for some 10 seconds, then slowly open the feeding door so as accumulated flue gas can be draught to the flue. During heating keep the feed hopper always full. To prevent smoke, stoke other fuel only after the original charge is burnt out at least to 1/3 of the content. Then cover live coal with a broad log and fill in as usually. The fuel must not be pressed over the jet as this could cause extingiushing the fire.

CAUTION! During operation the pull rod of fuel cut-off flap must be shifted in, otherwise the fan can be damaged.

Technical description of ATTACK DP PROFI:

During the operation, the display is showing the current temperature of outlet heating water. Speed of the fan are controlled in this way:
- if during burning up proces the boiler temperature is lower than 45 °C, the fan works with the output set up by the turning of burning up button situated in rear side of regulator in the range of 40 - 100 %. (on the display you can see r4 = 40% do r9 = 90 %, rF=100%), for boiler temperature higher than 45°C the fan works up to 100%.
- if the temperature of heating water during the operation is more than 10°C lower than the one set up by the turning button, the fan works in 100 % output.
- if the temperature of heating water is lower than 10°C from the temperature set up by the turning button of the boiler thermostat, the regulator decreases the output of ventilator according to the difference between these temperatures but only to the output not lower than 40%.
- if the boiler temperature is higher or equal to the temperature set up by the turning button of the boiler thermostat, the fan switches off.
- the ventilator switches on again after decreasing the boiler temperature in o 5°C comparing to the set up temperature.

The regulation of boiler ensures that the pump for central heating switches off when the temperature of oulet water in the boiler decreases under 60°C. The pump switches on again by the temperature higher than 65°C.

To prevent explosion of accumulated gas during ignition, the boiler regulator ensures purging of gas in the boiler in 5 seconds and then each minute until 9 minutes according to the position of the turning post-purge time button in the rear part of the regulator. During the set up there is always information on the display which lasts 2 seconds (P1,...., P9, P-). In case you do not wish purging of gas in the boiler, it is necessary to set up (P--)..
To make the process of burning up the boiler stable, there is a burning up system installed in the regulator. After plugging in or stopping the alarm the regulator is set up to the process of burning up and this mode is signalled by a shining dot on the display. The process of burning up is finished when the dot stops shinig and the boiler temperature reaches the value set up by the thermostat. In case the temperature in the boiler does not exceed 65 °C in 2 hours of burning up time,the regulator stops the waste-gas ventilator and switches on the control light - missing fuel.
In the time of burning out the boiler when the temperature falls under 65 °C and this condition lasts for more than 30 minutes, the regulator stops the flue-gas fan and the control light of missing fuel shines on.

Missing fuel

When the temperature of heating water in the boiler falls under 65 °C and this condition lasts for more than 30 minutes, the regulator stops the flue-gas fan and the control light of missing fuel shines on. If in the burning up process the boiler temperature does not raise to more than 65°C, missing fuel will be shining on the display after 2 hours. To start the regulation again, it is necessary to:
- refuel the boiler;
- burn the boiler up
- turn the turning button of the boiler thermostat into the maximum left position and thus stop the alarm
-wait until the control light of missing fuel flickers,
- by turning button of the boiler thermostat set up the required temperature of the boiler and the regulator starts the process of burning up

Overheating of the boiler

If the temperature of the boiler raises to more than 95 °C, the regulator stops the flue-gas fan and the control light of boiler overheating shines on. For new start it is necessary to:

- wait until the boiler temperature falls
- remove the cause of boiler overheating (e.g. refill missing water into the central heating circuit)

Warning! Water can be refilled only after the boiler temperature falls under 40°C.

- Turn the button of the boiler thermostat into the maximum left position ad thus stop the alarm
- wait until the control light of boiler overheating starts flickering;
- to start the regulator again, set up the required temperature of the boiler by the turning button of the thermostat;

If the temperature falls under 60 °C, the regulator comes into the burning up mode.

The ways of boiler regulation

The boiler enables regulation of room temperature as well as connecting the sensor of room temperature. If the room temperature is lower than the set up one, the control light near the button of thermostat shines on, which means that the boiler must keep the set up temperature. After reaching the required temperature the control light switchces off, the circuit pump of central heating switches off and the boiler starts burning at the temperature of 65 °C.
For the regulation by room temperature it is possible to connect with the terminals for the sensor of room temperature any room thermostat that can be programmable.In this case the turning button of the room thermostat is not working.
If you do not wish to use the room thermostat nor the room sensor, the inlet terminals must be short-circuited. In this case only the boiler thermostat is working.
To the boiler regulator can be also connected a mixing valve with an 12V electric drive. (This system is not delivered with the boiler).

Displaying faults:

The boiler regulator constantly verifies the functions of internal systems and of the sensor of boiler temperature. After finding out the defect, the regulator switches off the flue-gas fan, the central heating pump and at the same time the defect shows on the display. In the case of failure it is necessary to switch the boiler off by the main switch. Continuous operation of the central heating pump must be assured by plugging into the mains. Fuel must be burnt thoroughly and the contract service company contacted.
If E1 fault appears on the display, it means the damage of the sensor of boiler temperature.

Permanent-heat operation

Permanent-heat operation of the boiler means fire can be kept during the night without heating up daily, **but only in winter.** This way of operation shortens the service life of the boiler. For permanent-heat operation prepare the boiler this way:

- Put a few bigger logs (4-6)on the glowing layer
- Get the mixing valve ready. After closing the valve the temperature of water rises to 80-90°C.
- Regulation flap controlled by the thermoregulator is closed automaticly and the fan is switched off.

In the boiler prepared like this burning is kept for more than 12 hours. During permanent-heat operation the temperature of water in the boiler is **80 - 90°C**.

Cleaning the boiler

The boiler must be cleaned regularly and properly every 3-5 days because ash settled down in the feed hopper together with condensates and tar decreases output and service time of the boiler and isolates heat-exchanging surface. When there is too much ash, there is not enough space for burning out of fuel and a holder of ceramic jet as well as the whole boiler can be damaged. When cleaning the boiler, firstly turn the ventilator on, open the feeding door and wipe the ash through a slot into bottom space. Leave long unburnt logs in the feed hopper. Open the upper cleaning cover and clean inside with a brush. After opening the bottom cleaning hole take ash and soot out. After opening the bottom door clean the bottom space. Cleaning interval depends on the quality of wood (moisture content), heating intensity, draft of the flue and other circumstances. We recommend to clean the boiler once a week. **Do not pull the fireclay shaped piece out when cleaning.** Once a year minimally clean the moving wheel of the fan and check through the cleaning hole fouling of regulation of primary and secondary air flowing into feed chamber and clean with a screwdriver if necessary. It influences the output and quality of burning. ***WARNING*** **-** Regular and proper cleaning is important for permanent output and service life of the boiler. In case of insufficient cleaning the boiler can be damaged and **guarantee expires.**

Maintenance of heating system and boiler

At least once in fortnight check or fill up water in the heating system. If the boiler is out of operation during winter, water can be frost in the system. Therefore it is better to discharge water of the system or fill in with antifreeze agent.Otherwise discharge water only in critical situations and for the shortest time possible. **After heating season is finished, clean the boiler thoroughly**, replace damaged parts. Twice a year clean the moving wheel of the ventilator and its air chamber.

Changing the packing cord of the door

Dismantle the old packing cord with a screwdriver and clean the rabbet where it was placed. Take the new packing cord and put its begining on the horizontal parts of the rabbet. With your hand or light knock of the hammer press it into the rabbet on the circumference of the door.

Adjustment of hinges

After some time the packing cord in the door gets deformed. To repack the door, it is necessary to change the position of the door. The position is changed by tightening the hinges of the door. Feeding door and bottom door are joined to the body with two hinges which are attached to the door with a long pin. If we want to change the adjustmnent of hinges, it is necessary to remove the pin and screw the hinge by turning it. Fit the door on and insert the pin into the hinge.

Exchange of the nozzle body

The body of nozzle is placed in the boiler body in a nozzle holder. In the lower part is the nozzle body sealed by boiler lute and in the upper part by a packing cord. When exchanging the nozzle, remove the packing cord from the rabbet by a screwdriver. Remove the nozzle body and clean the holder thoroughly from the tar and old lute. On the cleaned surface put the nozzle body insulation. Take the nozzle and put it on the holder so that the shorter wall was in the rear part of the boiler pushed to the stop. The lateral clearance must be the same. Take the new set of packing cords of the nozzles and with a light knock press it into the gap so as to be at the same level with the nozzle.

Setting of the boiler combustion

Setting of the boiler combustion is executing through the regulations flaps of the primary and secondary air.

Boilers are from the production set for the most optimal burning conditions in term of the emissions and the tempertature of exhaust gas.Setting can be executed only by producer or by trained serviceman.

The most optimal setting of the regulation flaps:

flap of the primary air:	flap of the secondary air:
DP25 totally closed /backstop/	DP25 backstop +2 mm
DP35 totally closed /backstop/	DP35 backstop +2 mm
DP45 totally closed /backstop/	DP45 backstop +4 mm
DP75 backstop +5 mm	DP75 backstop +4 mm

Prescribed fuel

Specified fuel is dried cut wood and logs of 80-150mm diameter, with min. 12% and max. 20% moisture content and calorific value of 15 - 17MJkg^{-1}. It is also possible to burn big pieces of wooden waste with thick logs.

Note

Logs of bigger dimensions is necessary to cut into halves or quarters (because of the requirement of operation to nominal output). You can burn hard as well as soft wood. Wood must be dried!

Boiler output depends on the moisture content of wood. Output and function of the boiler is guaranteed for maximum moisture content of 20%.

Calorific values of the most used kinds of wood

Wood	*Heat energy for 1kg*		
	kcal	MJ	kWh
Spruce	3900	16,25	4,5
Pine	3800	15,80	4,4
Birch	3750	15,50	4,3
Oak	3600	15,10	4,2
Beech	3450	14,40	4,0

Chimney

Attachment of the appliance to the flue must be always done with approval of authorized chimney-sweeping company. There must always be sufficient draft in the flue and flue gas must be draught to the atmosphere in all possible operation conditions. For the right operation of the boiler the independent flue must be dimensioned in the right way, **because combustion, output and service life of boiler depends on the draught.** The draught is influenced by the section of flue, height and roughness of the internal wall. Into the flue where the boiler is attached, no other appliance can be attached. **The flue diameter must not be smaller than the outlet on the boiler.** Flue draught must have the specified values. But it must not be too high so as not to decrease the efficiency of boiler and interrupt burning. If the draught is too strong, install a throttle valve between the flue and boiler..

Informative values of flue section:

20 x 20cm	min.height 7m
Ø 20cm	min. height 8m
15 x 15cm	min. height 11m
Ø 16cm	min. height 12m

Exact dimensions of flue are specified by the standard STN 73 42 10. Flue draught is specified in technical parameters.

Exhaust pipe

Exhaust pipe must have the outlet into the chimney.If the boiler can not be attached to the chimney directly, the exhaust pipe must be **as short as possible and not longer than 1m** without heating surface and it must rise to the flue. Exhaust pipes must be tight and resistant against flue gas leakage and cleanable from inside. Exhaust pipes must not come through home and utility spaces and the internal section of the exhaust pipe must not be narrowing to the flue. Using of bents is not suitable.

Connecting the boiler to the mains net

The boiler is connected to the mains of 230 V, 50 Hz by a supply cord and plug. The voltage is of M type and when replaced, the same type must be used by a service oragnization.The appliance must be located in such a way that the plug was within the reach of the attendance.
(according to STN EN 60 335-1 + A11:1997).

Attachment of regulation and control elements

The boiler is delivered to a consumer equipped with basic regulation and control elements. Attachment of these elements is indicated on the chart of connection. We recommend to extend the regulation of boiler with other regulation elements which enable more comfortable and economic operation. Each pump in the system must be controlled by an individual thermostat so as **the boiler was not undercooled on the inlet of returnable water under 65°C**. Attachment of these elements can be suggested by a designer due to specific conditions of the heating system. Electric installation together with the proper equipment of the boiler must by done by a specialist in compliance with valid standards. The basic version of boiler (Standard) does not have a thermostat for pump built.

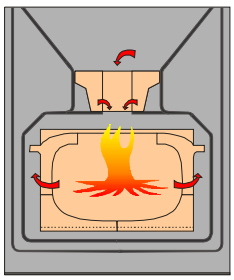
Protection of boiler against corrosion

Suitable solution to this problem is mixing appliance (Regumat ATTACK-OVENTROP) or a thermoregulation valve which enables separated boiler and heating circuit. This way you can prevent undercooling of boiler under 65°C and also decrease condensation of steam, acids and tars in the feed hopper. With a flap of three-way valve you can regulate the temperature of heating water independently on temperature of water in the boiler. Water in the boiler must be permanently of 80-90°C.

Standards for design and assembly of boilers:

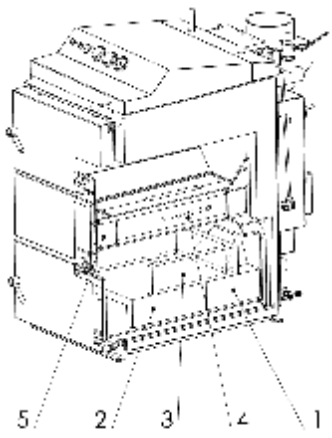
STN EN 303-5 - Heating boilers using solid fuel
STN 73 42 10 - Production of flues and exhaust pipes
STN 92 03 00 - Fire safety of local appliances
STN EN 60 335-1 +A11 - Safety of domestic electrical appliances
STN 06 10 00 - Local appliances of solid, liquid and gaseous fuels

Section cross boiler - combustion chamber



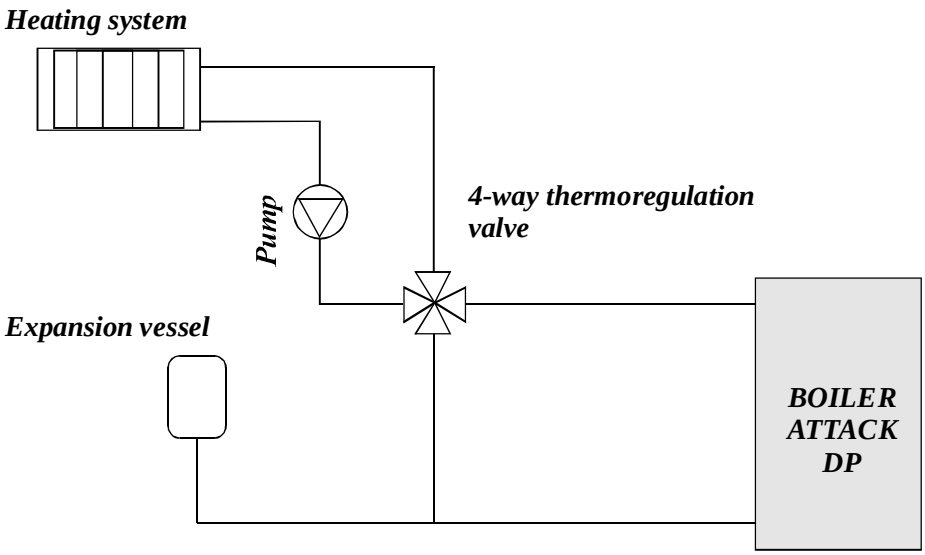
Installation and exchange of the heatproof shaped pieces:

The back part of the ash pan pos.1 insert into the lower chamber and push to stop to the back plate. Insert the front part of the ash pan pos.2 and push to stop to the back part of the ash pan.
On the ash pan put the super-structure of ash pan pos.3 and push it to stop to the rear. The ash pan should be situated in the centre line of boiler at the front sight.
By the exchange of the damaged jet pos.4 or cube pos. 5 follow the next: Jet and cube /cube only by DP35 and DP45/ take out after the elimination of gaskets. Then insert new jet eventually cube and backwards seal up with gasket. If it is necessary, gaskets also change with new. The jet is inserted with the sign, which is situated on the lower part of the jet into the back part of the boiler.

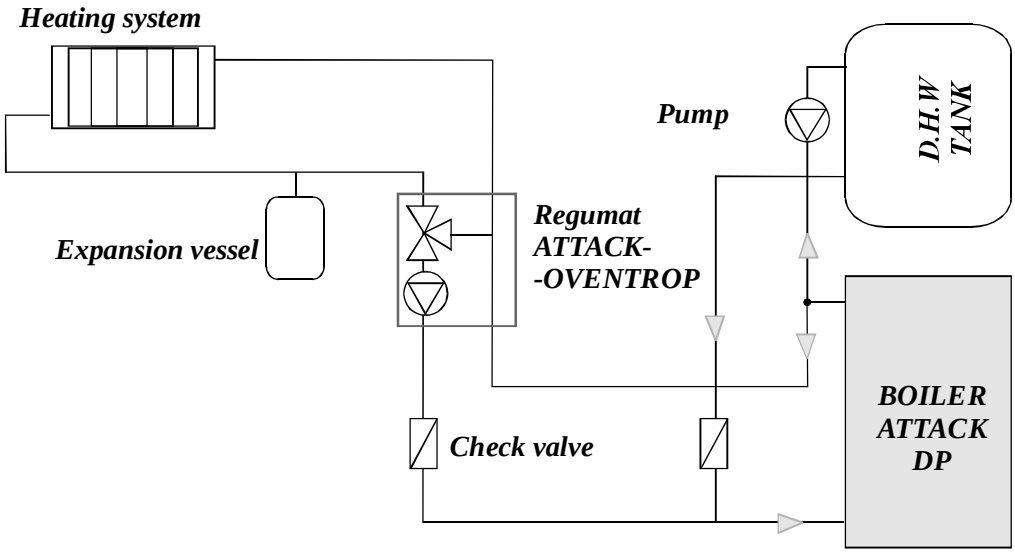


Recommended connections

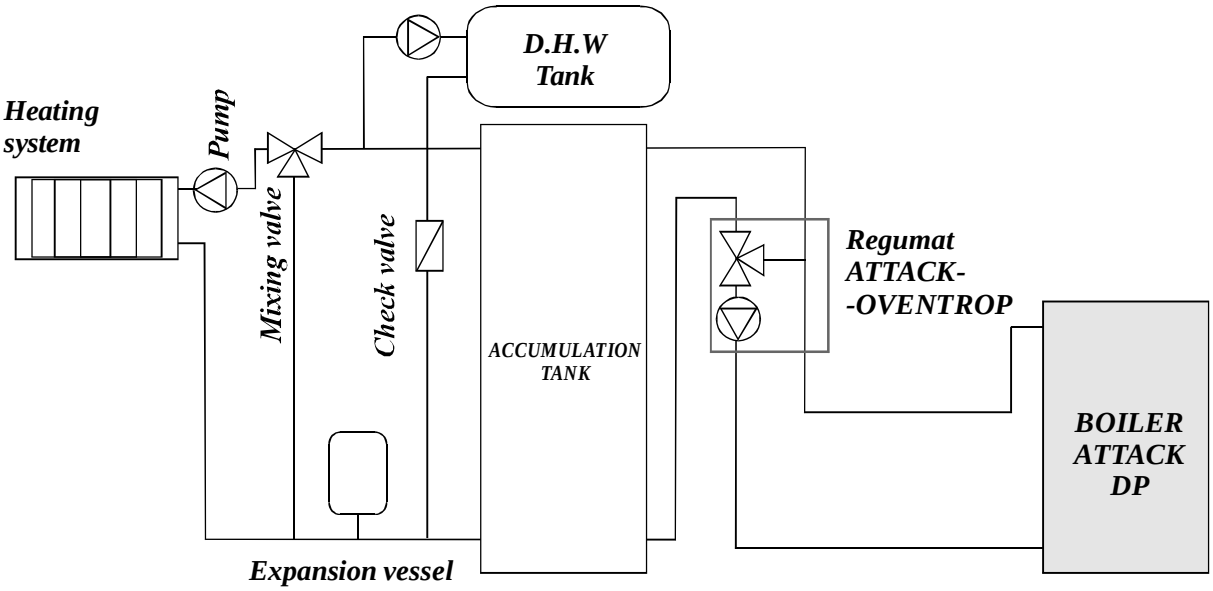
Recommended connection of boiler with 4-way thermoregulation valve



Recommended connection of boiler with REGUMAT ATTACK-OVENTROP



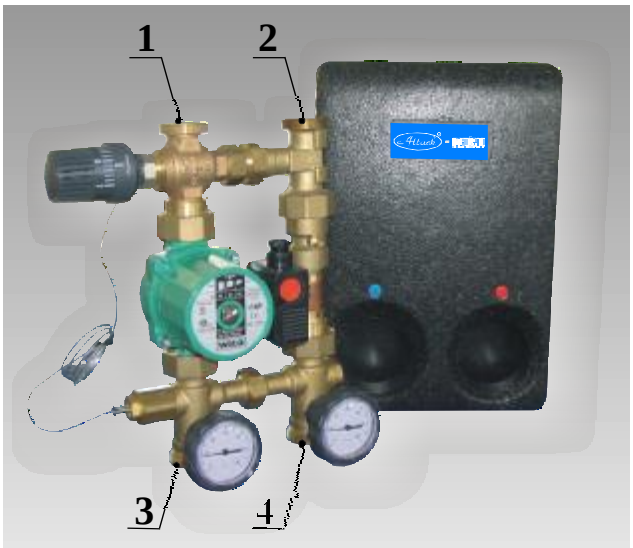
Recommended connection of boiler with accumulation tank



Boiler has to be operated with the nominal output. In case of the warmth taking by the output, which is lower than the nominal, it is necessary to connect the boiler with the accumulation tank with volume of min. 460 l (STN EN 303-5, clause 4.2.5).

Protection and usefull life extention of the boiler

1. ATTACK Oventrop keeps the temperature of return heating water coming to the boiler on 65 °C. Temperature of return heating water under 60°C causes the condensation of steams, acids and tars in the feed chamber and it is the reason of the boiler usefull life shortening.



Technical parameters:
Clarity DN25
Max.pressure 10 bar
Max.temperature 120°C
Value kvs 3,9

ATTACK Oventrop consists of three-way mixing valve, pump Wilo, 2 thermometers, thermoregulation valve, thermostatic head, by-pass, distance unit and isolation. The adventage of this solution consists in compactness, simple attendance and guaranteed protection of boiler heating exchanger.

ATTACK Oventrop for boilers:	Order code:
ATTACK DP25,DP35, DP45, DP75	DPP25003

2. Connection with threeway thermoregulation valve

Operational principle is the same as the connection with ATTACK Oventrop regulation system. When the temperature is higher that 65°C the thermoregulation valve opens the circuit in heating system. When the temperature is lower than 65°C makes this circuit closed and the boiler works in the short boiler circuit. This appliance keeps the return heating water comming to the boiler at the min. temperature of 65°C.

Recommended threeway regulation valve:

For Boiler:	Type:	Order code:
ATTACK DP25, DP35	DN32	DPP25004
ATTACK DP45, DP75	DN50	DPP45001

3. Connection with accumulation tank

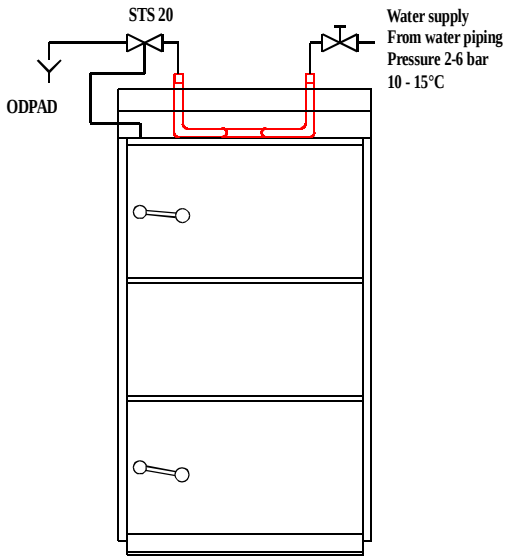
Connection system consists in heating up of water in accumulation tanks and the warmth is gradually taking away from the tanks according to the request from the heating system. By the operation with several heating ups at full performance, accumulation tanks will be heated for the temperature of 90-100°C. Heating with accumulation tanks in connection with the ATTACK DP boilers bring more advantages.. Among the main advantages belong enlargement of the boiler life and in the end result also lower consumption of fuel.

Recommended volumes of accumulation tanks according to boiler output:

DP25 - 1500 - 2000 l
DP35 - 2000 - 2500 l
DP45 - 2500 - 3000 l
DP75 - 4000 - 4500 l

Protection of the boiler against overheating

CAUTION: Cooling circuit against overheating must not be used by STN EN 303-5 for other use than protection against overheating.



STS 20 valve which has a sensor placed in the rear part of the boiler protects the boiler against overheating. If the temperature of water in the boiler overcomes 95°C, the valve lets water into a cooling circuit which overtakes excessing heat and discharges it into the drain.

Instructions for liquidation of the product after its lifetime

The product should be liquidated by selling to a scrap-material dealer or to a dump managed by a local authority.

Liquidation of wrapping

.The wrapping should be liquidated by selling to a scrap-material dealer or to a dump managed by a local authority.

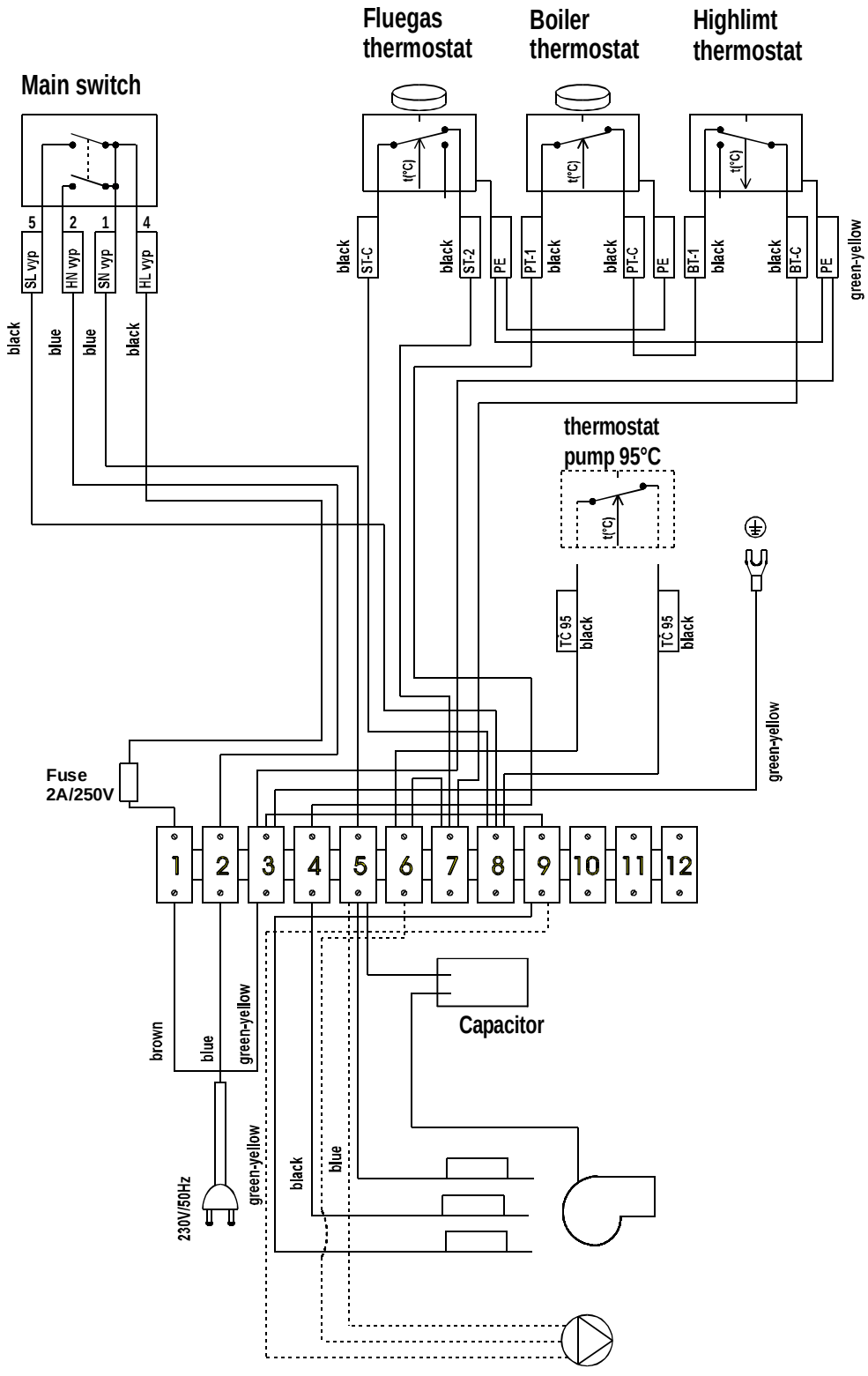
Possible defects and how to remedy them

Defect	Cause	Remedy
Control light power net" is not lighting	No voltage in the mains	Check
	Plug not plugged properly	Check
	Switch damaged	Replace
	Cord damaged	Replace
Boiler does not have demanded parameters	Low water in the system	Refill
	Too big output of the pump	Regulate the flow and switching
	Boiler output is not dimensioned sufficiently for the system	Mistake in project
	Bad-quality fuel	Burn only dried wood and cut logs
	Fuel cut-off flap does not seal	Repair
	Weak chimney draft	New flue, wrong attachment
	Strong chimney draft	Place a cut-off slide into exhaust pipe
	Long heating up or operation with open fuel cut-off slide	Strighten the vanes to 90°
	Deformed vanes of fan	Replace
	Boiler not cleaned properly	Clean up
	Air inlet into combustion chamber fouled	Clean up
Door not sealed	Damaged packing cord	Replace, set up the hinges
	Jet clogged	Do not burn small wood, bark
	Weak flue draft	Defect of flue
Fan is not turning or is noisy	When a non-returnable safety thermostat is used, it can be disconnected after overheating	Push thermostat button
	Moving wheel fouled	Clean the fan
	Defected condensator	Replace
	Defected motor	Replace
	Bad contact in the plug of the supply cable of motor	Check

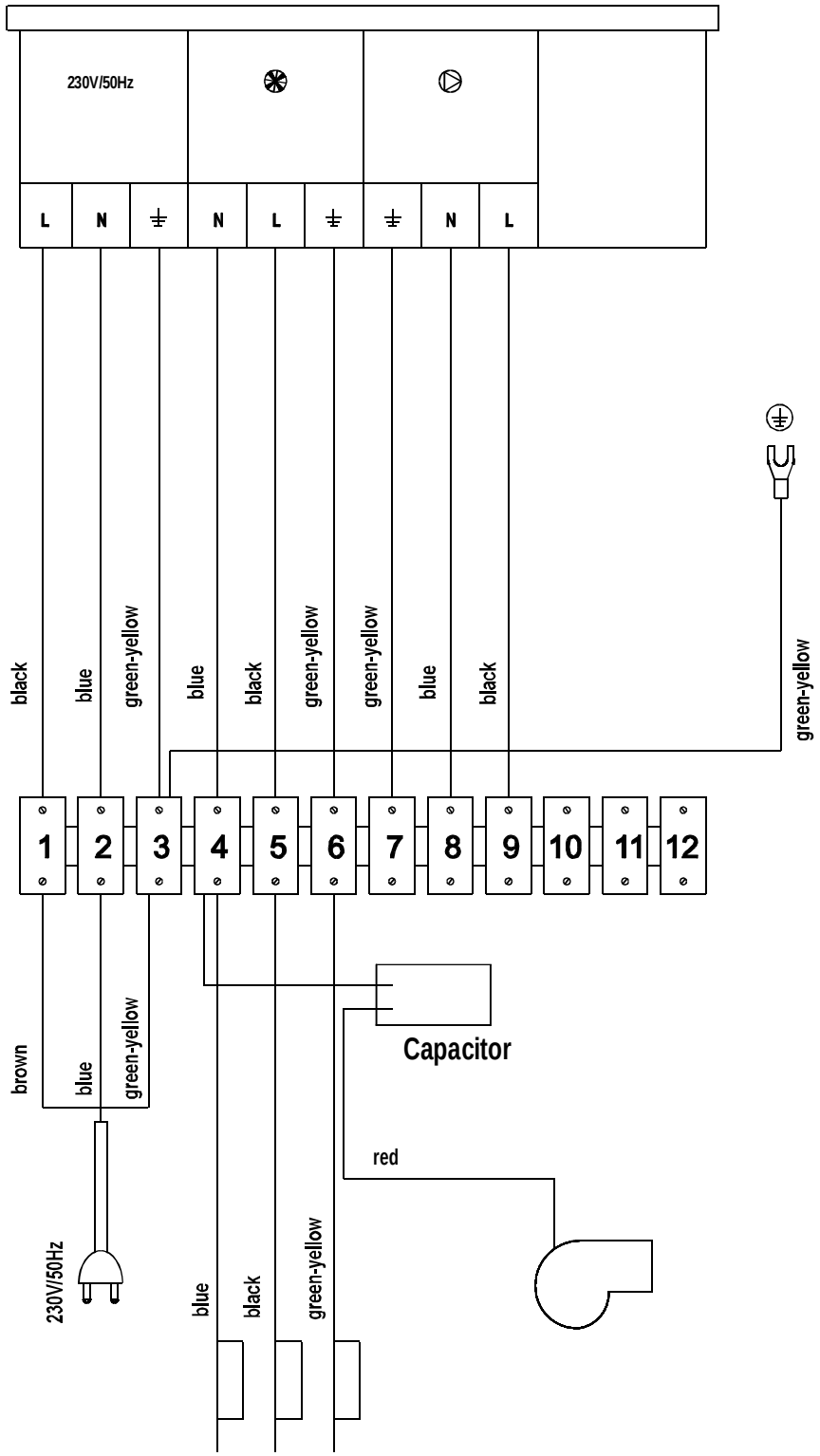
Scheme of dependency of resistance on the temperature of heating water by the thermal probe (DP PROFI)

Teplota °C	Odpor kOhm		
	MIN		MAX
-55	951	980	1009
-50	1000	1030	1059
-40	1105	1135	1165
-30	1218	1247	1277
-20	1338	1367	1396
-10	1467	1495	1523
0	1603	1630	1656
10	1748	1772	1797
20	1901	1922	1944
25	1980	2000	2020
30	2057	2080	2102
40	2217	2245	2272
50	2383	2417	2451
60	2557	2597	2637
70	2737	2785	2832
80	2924	2980	3035
90	3118	3182	3246
100	3318	3392	3466
110	3523	3607	3691
120	3722	3817	3912
125	3815	3915	4016
130	3901	4008	4114
140	4049	4166	4283
150	4153	4280	4407

WIRING DIAGRAM OF GASIFYING BOILER DP25, DP35, DP45, DP75 WITH CAPACITOR



WIRING DIAGRAM OF GASIFYING BOILER DP25, DP35, DP45, DP75 "PROFI" WITH CAPACITOR



This page serves for confirming service examinations and is kept by a customer ! ! !

RECORD ON PUTTING THE BOILER TO OPERATION

Production number.....

Date of putting to operation.....

Service organization:

.....

.Stamp, signature

.....

Data on the customer (llegible)

Name and surname:

.....

Street: .....

Post code, town:.

.....

Tel. No. .....

Obligatory service examination after the 1st year of operation

Date : ..... Stamp, signature of service organization. : .....

Obligatory service examination after the 2nd year of operation

Date : ..... Stamp, signature of service organization. : .....

Obligatory service examination after the 3 rd year of operation

Date : ..... Stamp, signature of service organization. : .....

DOCUMENT on testing and completness of ATTACK gasifying boiler

DP25	DP35	DP45	DP75
	STANDARD	PROFI	

Boiler production No.:

The product delivered with this certificate suits to technical standards and technical conditions.
The product was manufactured by its drawing design in requested quality and is approved by SZÚ Brno under the No. of certificate

Technical inspection

In Vrútky, date: .....

Stamp and signature of the final inspection: .....

The country of delivery of the appliance :

SK	CZ	AT	CH	DK	ES	FI	FR	GB	GR	IE	IT	NL	NO	PT	SE

Producer:
ATTACK, s.r.o.
Dielenská Kružná 5
038 61 Vrútky
SLOVENSKO

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